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Jong Bong Kim

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EXAMINER

JACOBS, TODD D

ART UNIT

PAPER NUMBER

4159

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,621	Applicant(s) KIM ET AL.	
	Examiner TODD D. JACOBS	Art Unit 4159	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39, 41, 43 and 44 is/are rejected.
- 7) ☒ Claim(s) 40 and 42 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5 June 2008</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-5 of U.S. Patent No. 7,146,903. For double patenting to

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exist as between the rejected claims and patent claims 1-5, it must be determined that the rejected claims are not patentably distinct from claims 1-5. In order to make this determination, it first must be determined whether there are any differences between the rejected claims and claims 1-5 and, if so, whether those differences render the claims patentably distinct.

4. It is clear that all the elements of claims 1-5 are to be found in claims 1-5 of the patent. The difference between claims 1-5 of the application and claims 1-5 of the patent lie in the fact that the patent claim includes many more elements and is thus much more specific; there is an eccentric mass limitation in the patent. Thus the invention of claims 1-5 of the patent are in effect a "species" of the "generic" invention of claims 1-5. It has been held that the generic invention is "anticipated" by the "species". See *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993). Since claims 1-5 are anticipated by claims 1-5 of the patent, they are not patentably distinct from claims 1-5.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The limitation "the track", recited in claim 44, on page 42 line 18, is indefinite because lacks antecedent basis.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. Claims 1-13, 15-20, 27-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Bae et al (US Patent 6,755,624).

9. In re claim 1, with reference to figure 1, Bae discloses a dual capacity compressor comprising:

- a power generating part including a reversible motor and a crank shaft inserted in the motor (col 13 line 34);
- a compression part including a cylinder, a piston in the cylinder, and a connecting rod connected to the piston (col 13 line 37);
- a crank pin in an upper part of the crank shaft eccentric from an axis of the crank shaft (col 13 line 39);
- an eccentric sleeve (220) having an inside circumferential surface rotatably fitted to an outside circumferential surface of the crank pin (210), and an outside circumferential surface rotatably fitted to an end of the connecting rod (33);
- a key member (230) configured such that the key member (230) is held at at least a part of the eccentric sleeve (220), and held at the eccentric sleeve (220) additionally during operation, for latching the eccentric sleeve (220) with the crank pin (210) positively in all rotation directions of the motor; and
- thereby providing different compression capacities by re-arranging the eccentric sleeve that changes an effective eccentricity and a piston displacement following change of a direction of rotation of the motor, and preventing relative motion between the crank pin and the eccentric sleeve during operation by means of the key member actually regardless of the direction of rotation of the motor (col 13, line 47).

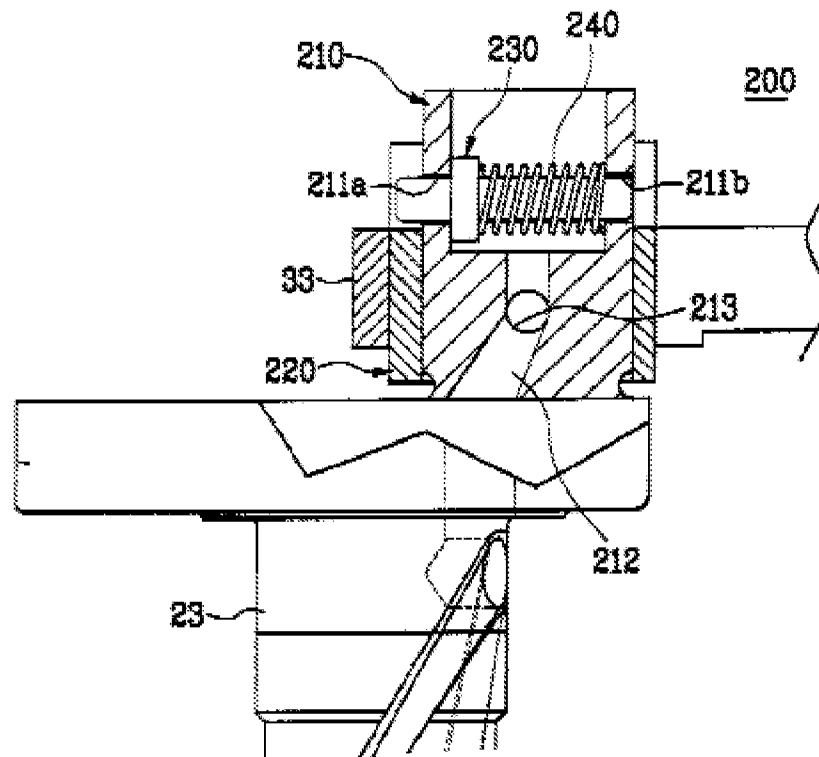


Figure 1

10. In re claim 2, Bae discloses the key member catching the eccentric sleeve at a plurality of points (col 13, line 54).

11. In re claim 3, Bae discloses the key member catching the eccentric sleeve at two points set up with reference to a center line in any direction during operation (col 13, line 59).

12. In re claim 4, Bae discloses the key member having a length greater than an outside diameter of the crank pin (col 13, line 56).

13. In re claim 5, with reference to figure 1, Bae discloses the key member (230) continuously held at at least a part of the eccentric sleeve (220) relatively positioned on a radial direction inner side of the crank shaft (23).

14. In re claim 6, with reference to figure 2, Bae discloses the key member including;

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- a first projection (231) for continuous projection beyond the crank pin (210) by a predetermined length, and
- a second projection (232) for projection beyond the crank pin (210) by a predetermined length only during operation (col 15, line 53).

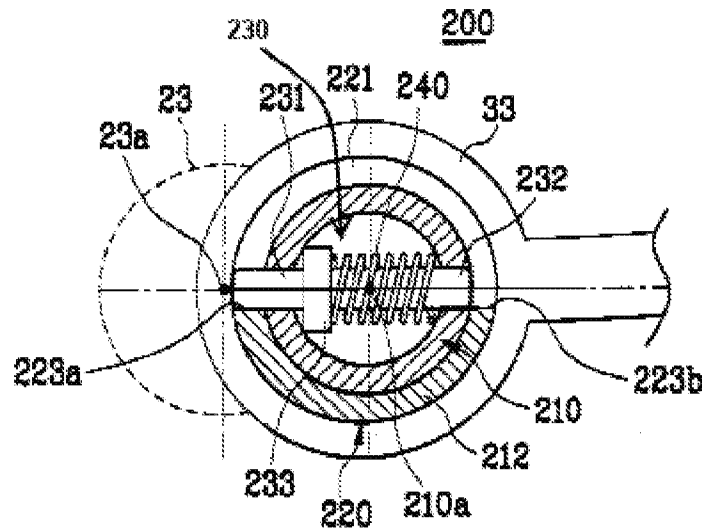


Figure 2

15. In re claim 7, with reference to figure 2, Bae discloses the first projection (231) projected continuously in a radial direction inner side.
16. In re claim 8, with reference to figure 2, Bae discloses the key member (230) preventing rotation of the eccentric sleeve (220) coming from a centrifugal force, and a consequential rotational moment.
17. In re claim 9, with reference to figure 2, Bae discloses the key member (230) continuously held at at least a part of the eccentric sleeve (220) so that a rotational moment is generated at the eccentric sleeve (220) in a direction opposite to the rotation direction of the crank shaft (23).

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18. In re claim 10, with reference to figure 2, Bae discloses the key member (230) continuously held at at least a part of the eccentric sleeve (220) relatively positioned on a radial direction outer side of the crank shaft (23).

19. In re claim 11, with reference figure 2, Bae discloses key member including;

- a first projection (231) for continuous projection beyond the crank pin (210), and
- a second projection (232) for continuous projection beyond the crank pin (210), and being held at the eccentric sleeve (220) during operation of the compressor (col 15, line 53).

20. In re claim 12, with reference to figure 2, Bae discloses the first projection (231) projected toward a radial direction outer side of the crank shaft (23).

21. In re claim 13, with reference to figure 2, Bae discloses the second projection (232) is projected beyond the crank pin (210) such that the second projection (232) does not interfere with the eccentric sleeve (220) when the compressor is stationary.

22. In re claim 15, with reference to figure 2, Bae discloses the key member (230) including a stopper (233) positioned in the crank pin (210) for limiting movement of the key member.

23. In re claim 16, with reference to figure 2, Bae discloses the stopper (233) having a contact surface to the crank pin (210) formed to fit to an inside circumferential surface of the crank pin (210).

24. In re claim 17, with reference to figure 2 of Bae, Bae discloses the stopper (233) being a first stopper for limiting movement of the key member (230) in one direction.

25. In re claim 18, Bae discloses the stopper further including a second stopper for limiting movement of the key member in an opposite direction (col 15, line 4).

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26. In re claim 19, Bae discloses the key member further including an elastic member for supporting the key member to project at least a part of the key member beyond the crank pin continuously regardless of a state of operation of the compressor (col 15, line 32).

27. In re claim 20, with reference to figure 2, Bae discloses the elastic member (240) limiting movement of the key member (230) in one direction.

28. In re claim 27, with reference to figure 3, Bae discloses the crank pin (110) including one pair of key member fitting parts (111a, 111b) opposite to each other.

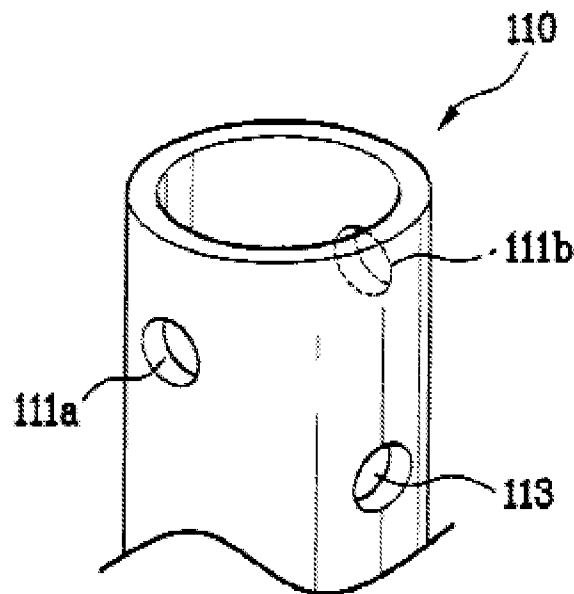


Figure 3

29. In re claim 28, with reference to figure 3, Bae discloses the key member fitting part (111a, 111b) in the crank pin (110) is a through hole in a wall of the crank pin (110).

30. In re claim 29, with reference to figure 4, Bae discloses the key member fitting part (111a, 111b) in the crank pin (110) including at least one slot (111a) extended from a top end of a wall of the crank pin to a position of the wall.

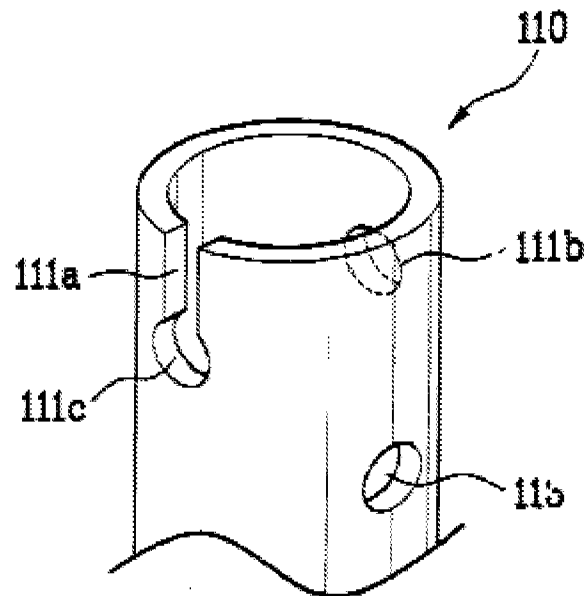


Figure 4

31. In re claim 30, Bae discloses the eccentric sleeve including;

- a track part formed along a direction of extension of a body thereof itself for enabling rotation of the projection of the key member, and
- a limiting part formed relative to the track part for limiting rotation of the projection of the key member (col 14 line 1).

32. In re claim 31, Bae discloses the track part of the eccentric sleeve having a cut away part starting from a top end of the eccentric sleeve to a required depth extended along a circumference direction (col 14, line 6).

33. In re claim 32, Bae discloses the steps between the track part and the limiting part parallel to a plane containing both a longitudinal axis of the crank shaft and a longitudinal axis of the crank pin (col 14, line 13).

34. In re claim 33, Bae discloses the steps spaced from a plane containing both a longitudinal axis of the crank shaft and a longitudinal axis of the crank pin by a half of a thickness of the key member, respectively (col 14, line 18).

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35. In re claim 34, with reference to claim 11 of Bae, Bae discloses the step sloped at an angle from a plane containing both a longitudinal axis of the crank shaft and a longitudinal axis of the crank pin (col 14 line 23).

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

37. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Campbell (3,873,446).

38. In re claim 14, Bae fails to disclose the second projection including a channel for passing the eccentric sleeve when the compressor is stationary.

39. However, Campbell, with reference to figure 5, discloses the use of a U-shaped spacer, or channel to control the spacing of objects. This spacer would be able to control how far a key or bolt protruded in various directions.

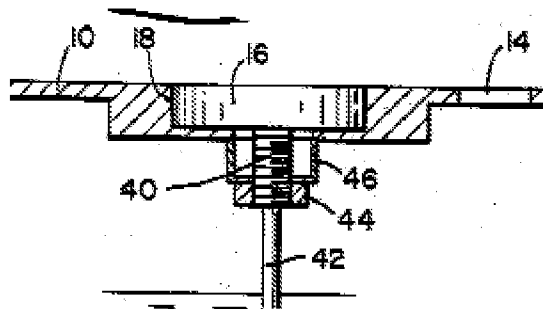


Figure 5

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40. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify Bae in view of Campbell by adding a channel as taught by Campbell to the second projection of Bae in order to allow passing the eccentric sleeve when the compressor is stationary.

41. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae.

42. In re claim 21, Bae discloses the elastic member having a uniform elastic force but fails to disclose the elastic member having a non-uniform elastic force.

43. However, with respect to figure 6, Bae discloses a second elastic member (234c) adjacent to the elastic member (240). If these two were connected as one member, the elastic member would have a non-uniform elastic force. Note that the limitation elastic does not require the member to be a spring.

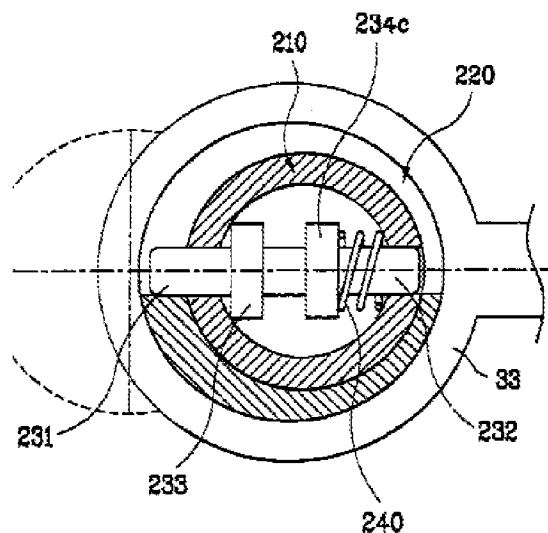


Figure 6

44. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the elastic member and second elastic member integral, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the

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art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1993). Please note that in the instant application applicant has not disclosed any criticality for the claimed limitations.

45. In re claim 22, Bae as discussed above discloses the elastic member (234c, 240) having a part with an elastic force relatively greater than other part.

46. In re claim 23, Bae as discussed above discloses the elastic member (234c, 240) having a part with an elastic force greater than a centrifugal force generated at the key member.

47. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae.

48. In re claim 24, Bae discloses the elastic member including;

- a first elastic member in contact with the key member, and
- a second elastic member in contact with the first elastic member, having an elastic force greater than the first elastic member.

49. However, Bae fails to disclose a second elastic member in contact with the inside circumferential surface of the crank pin.

50. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form two elastic members, with reference to figure 6, 233 and 234c into one elastic member thereby allowing a second elastic member (234c, 233) to be in contact with the inside circumferential surface of the crank pin, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1993). Please note that in the instant application applicant has not disclosed any criticality for the claimed limitations.

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51. In re claim 25, Bae as discussed above, in view of claim 52 of Bae, discloses the second elastic member (234c, 233) having an elastic force greater than the centrifugal force generated at the key member.

52. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Miller et al (5,906,047).

53. In re claim 26, Bae as discussed above in regard to claims 24-25, discloses the first elastic member being a spring with a predetermined diameter, but fails to discloses the second elastic member (234c, 233) being a spring.

54. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a spring instead of the elastic member since the examiner takes Official Notice of the equivalence of elastic members and springs for their use in the mechanical engineering art and the selection of any of these known equivalents to store mechanical energy would be within the level of ordinary skill in the art.

55. Bae also fails to disclose the second elastic member with a diameter greater than the first elastic member.

56. Nevertheless, Miller, with reference to figure 7 below, discloses the use of a spring (112) with two different diameters. This allows for further control of how much to force the key member to move in operation.

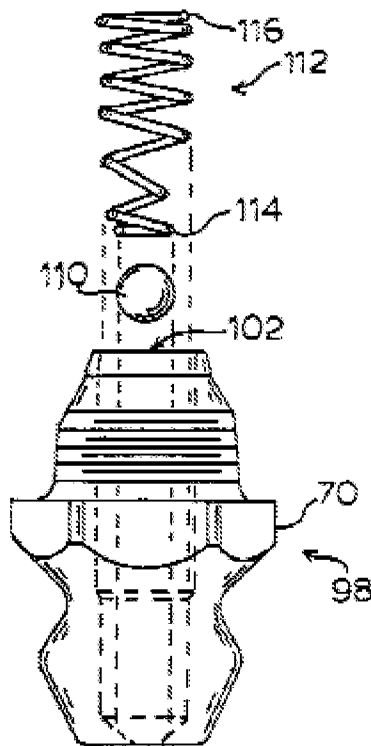


Figure 7

57. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify Bae as discussed above in further view of Miller in order to have different diameters on the spring elastic member -- the choice of the diameters being a mere design choice -- to have further control on how much the key member moves in operation.

58. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Caracciolo (5,725,593).

59. In re claim 35, Bae fails to disclose the eccentric sleeve further including a ring member provided between a bottom surface of the eccentric sleeve and a top surface of the crank shaft.

60. Nevertheless, Caracciolo, with reference to figure 8, discusses circular rises (14f) with will "reduce the friction with the internal cavity (10a) of the acetabulum 10 in order to get the maximum sliding and the minimum dissipation of mechanical power, even with high radial loads"

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(column 2, line 59). These circular rises, or rings, offer the advantage of sliding with less friction.

61. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify Bae in view of Caracciolo by adding a circular surface, or ring, between two sliding objects in order to decrease the friction between them.

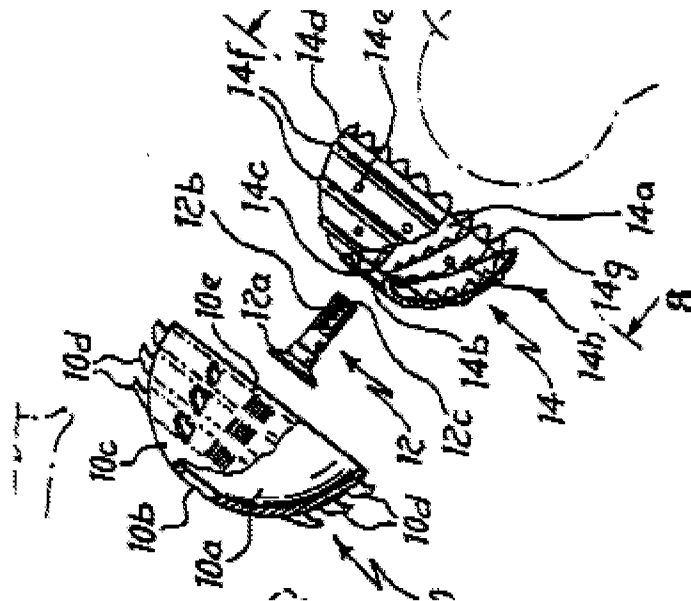


Figure 8

62. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Caracciolo (3,416,177).

63. In re claim 36, Bae fails to disclose the eccentric sleeve further including a balance weight for preventing breaking away of the eccentric sleeve from the key member due to rotation before the key member latches the eccentric sleeve perfectly by shifting a center of gravity of the eccentric sleeve.

64. Nevertheless, Young, with reference to figure 9, discloses using a counterweight (19) that compensates for additional side weight and it "serves the function of providing an opposing dynamic balancing force when the machine is operated" (column 3, line 37).

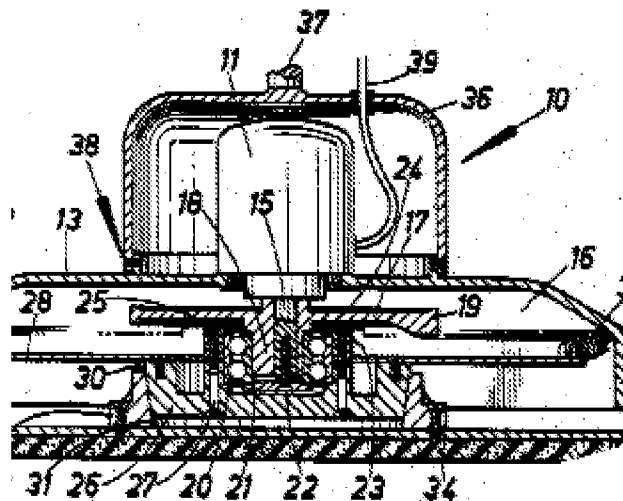


Figure 9

65. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify Bae in view of Young by adding a counter balance plate in order to create a balance on the eccentric sleeve relative to the key member. This would prevent breaking away of the eccentric sleeve from the key member due to rotation before the key member latches the eccentric sleeve perfectly by shifting a center of gravity of the eccentric sleeve.

66. In re claim 37, Bae in view of Young as discussed above inherently discloses the balance weight preventing rotation of the eccentric sleeve by a rotational moment.

67. In re claim 38, Bae in view of Young as discussed above inherently discloses the balance weight preventing the rotational moment from generating at the eccentric sleeve.

68. In re claim 39, Bae in view of Young as discussed above inherently discloses the balance weight positions the center of gravity of the eccentric sleeve on a plane containing both a longitudinal axis of the crank shaft and a longitudinal axis of the crank pin.

69. In re claim 41, Bae in view of Young as discussed above inherently discloses the balance weight generating the rotational moment in a direction opposite to the rotation direction.

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70. In re claim 43, Bae in view of Young as discussed above inherently discloses the balance weight provided to a part of the eccentric sleeve having a relatively light weight.

71. In re claim 44, as best understood, Bae in view of Young as discussed above inherently discloses the balance weight provided to the track part of the eccentric sleeve.

Allowable Subject Matter

72. Claims 40, 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

73. The following is a statement of reasons for the indication of allowable subject matter: while the use of a balance plate is widely known, the further limitations of this plate are not obvious.

Conclusion

74. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 4494447 to Sisk discloses an eccentric device with a balancing mass.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TODD D. JACOBS whose telephone number is (571)270-5708. The examiner can normally be reached on Monday - Friday, 7:30-5:00; Alt. Fridays only.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on 571-272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quang T Van/
Primary Examiner, Art Unit 3742

/T. D. J./
Examiner, Art Unit 4159